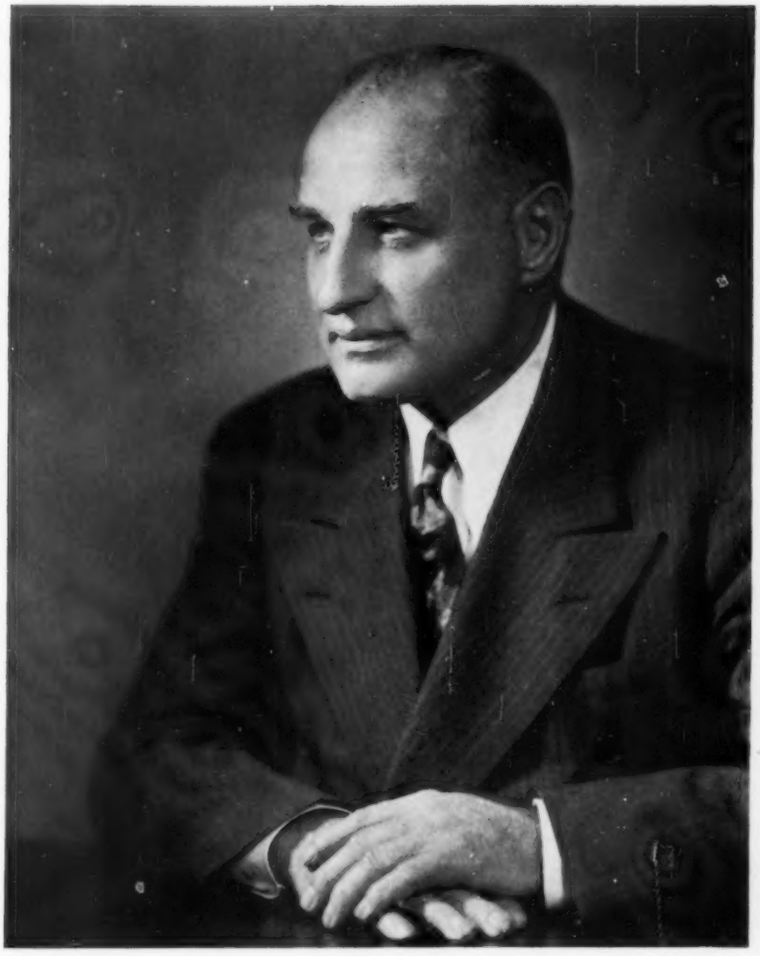
SPE JOURNAL



Dr. Howard E. Fritz, Vice President, B. F. Goodrich Co., Keynote Speaker for Conference Banquet. (See page four)

Published by the Society of Plastics Engineers, Inc.

Volume 5, Number 10 December, 1949

DURITE

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SPE Journal

Published monthly except July and August by the Society of Plastics Engineers, Inc.

ISSUED MONTHLY TO ALL MEMBERS OF THE SOCIETY OF PLASTICS ENGINEERS

INDEX

ARTICLES

DEAR MEMBER:
By Paul C. Roche 2

DEBELL ON PLASTICS IN JAPAN
By George W. Martin 2

SALVAGING PLASTICS SCRAP
By Warren A. Sharp 3

CONFERENCE PROGRAM ANNOUNCED 4

NEWARK HEARS THOMAS AND GOSS
By Peter W. Simmons 10

TENTATIVE SCHEDULE FOR CONFERENCE 11

TOEPEL DISCUSSES SCREWS
By Arthur M. Merrill 13

INDEX TO VOLUME FIVE 12

SECTION NOTES 14

ADVERTISERS

A B A Tool & Die Company 6
Acme Marking Equipment Co. 10
Art Roll Leaf Stamping Company 11
Durez Plastics & Chemicals, Inc. 10
The Borden Company, Durite Div. ..... Front Cover
Imperial Molded Products Corp. 13
Miskella Infra-Red Company 5
Rogers Plastic Corp. 4
Standard Tool Company 11
The Watson-Stillman Company 9

The Society of Plastics Engineers Journal is not responsible for the views expressed by individual contributors. All material submitted must be received not later than the fifth of the month for publication in that month. Communications should be addressed to Dr. Jesse H. Day, Society of Plastics Engineers Journal, Athens, Ohio.

Ladies Invited

Ladies, plan to attend the Sixth Annual National Technical Conference with your husband during the week of January 9. Mrs. Beth Fowles is heading the committee making arrangements for entertainment. The committee plans to start activities with a get-together luncheon at 1:00 P.M. at the Hotel Carter on Wednesday, January 11. The Lindner-Davis Co. and the Sterling & Welch Co. are being contacted for a plastics style show in the afternoon.

On Thursday the plans are to have the ladies board buses at 9:30 A.M. and be taken to Nela Park, General Electric Lighting Institute, for a tour of the facilities. A luncheon in Shaker Square is scheduled to follow the plant tour. The buses will then return the ladies to the Carter Hotel, via many scenic and interesting points, early enough so that they can rest and be ready for the banquet.

The men have planned a surprise gift for all the ladies attending the banquet.

The registration fee will include a corsage, the two luncheons and the tour.

Come and enjoy yourself while your husband attends the technical sessions.

Position Desired by Young Man, with 10 years experience as General and Production Manager. Experienced cost, fabrication and molding; tools, dies and mold design and construction; shop problems. College, engineering and practical experience background.
R. G. Davis—P.O. Box 167, Starke, Fla.

SPE JOURNAL

Volume 5 December, 1949 Number 10

Published monthly except July and August by the
SOCIETY OF PLASTICS ENGINEERS, INC.
409 SECURITY BANK BLDG.
ATHENS, OHIO

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DEAR MEMBER:

Perhaps so delicate a subject should warrant a delicate approach, but since space for such gentle language does not permit, I can but accuse you of wholesale dishonesty in this opening sentence. This does not apply to all, but to a majority of the section members.

Ironically, the dishonesty is self directed. In short most of our members are gypping themselves by removing hard-to-get cash from their own jeens to pay SPE dues and then failing to deliver honest value to themselves in the form of participation and benefits. Perhaps you feel an awareness of not getting your money's worth, but let us not assume the cloak of the victim and martyr—the SPE is a corporation, bub, and you are one of the principals. Like a sponge absorbing water (or spirits, in case that is more familiar to you) these benefits are very readily absorbed but you do have to go so far as to bring the sponge into contact with the fluid.

In listing the benefits no great mention need be made of the regular section monthly meetings—these were probably the main feature that attracted you to join in the first place. There are no better speakers to be had on any subject in our field than those available to your section. Your program committee aims to treat diversified topics by selecting subject matter of interest to the varying viewpoints represented, those of molders, mold builders, materials, & machinery representatives. If you are not being suited, make yourself heard. You are in this as deep as your program committee, and you are selling yourself short if you don't express your beef. The program committee just aches for opinions and guidance since without them they are forced to grope in the dark. You can and will get action.

The SPE Journal, organ of The National Society, the sections and the members, speaks for itself. Due solely to the industrious work of a few tireless individuals, this publication has continued to move uphill. The cost has been all work. This effort could benefit by your support. Failing that, the mere knowledge of a news item concerning you as a member is wanted right now for publication.

Have you ever attended an annual meeting? Here is the medium for getting brought up to date in a hurry on developments in your industry. You need only be sold the first time. Next month, January 1950, the meeting will be held in Cleveland, a very handy spot for you to attend. Make plans now—latch yourself onto a group of friends driving down.

Did you know that many individuals, from "Trainers" up to the Key personnel, have been placed in their positions through quiet behind-the-scenes SPE backing. It is not the purpose of your society to cause separations or personnel changes in the industry, but if a good position is open and a qualified man is available, the SPE can move quickly and effectively to bring them together. If this service were extended to you but once in a lifetime, wouldn't that be a generous return on your investment?

With or without the specific intention of the organization, the SPE is a great success socially. If you stayed away all year and showed for the summer outing you would receive good value—but please don't settle for that. Here is a group of grand fellows with your own interests, your own problems, and they are easy to know. Perhaps above all else I am personally grateful to the SPE for providing a medium for knowing key men in the industry well enough that I can at any time get on the phone and trade a drum or a truckload of material, borrow a toggle member for a press that's on a rush job and broke down, or exchange an experience on a molding material or a tool steel.

Let's have done with this petty larceny and get on the beam! Be an SPE member in action as well as words.

PAUL C. ROCHE
Membership Chairman
Northwestern Pénnsylvania Section

DeBell on PLASTICS in Japan

By GEORGE W. MARTIN

The Western New England Section of the Society of Plastics Engineers, held their regular meeting November 2, 1949. The meeting, held at the Hotel Sheraton, Springfield, Mass., was presided over by Section President, Sherwood Young.

Following a brief business meeting, door prizes were awarded, compliments of Rogers Plastics Corp., West Warren, Mass.

President Young then turned the meeting over to the program chairman, Mario Petretti, who introduced the speaker of the evening, Mr. John M. DeBell, President of DeBell and Richardson, Inc.

Mr. DeBell, who has just returned from an extensive trip throughout Japan, chose for his subject, "The Japanese Slant On Plastics."

The speaker prefaced his talk with an interesting and colorful description of his trip to Japan via the Airways.

He noted that the country seemed very well organized, attributing this largely to the occupation forces. The organic chemical industry is good, but is hampered by the lack of raw material and the difficulty of acquiring it. The plants themselves are in poor physical condition due to the lack of maintenance.

Phenolics are fairly plentiful, but expensive. Ureas are good and are widely used competitively. The compression molding field in general is about thirty years behind the United States. There are no large molds, no transfer molding, and no preheating in the country.

The thermoplastic field is quite limited, and Mr. DeBell noted that he did not see a decent injection molding plant on the whole tour.

One of the chief drawbacks is in the fact that very little money is allowed to leave the country, and then only for essential machinery and know-how, besides the fact that all raw materials must be imported.

The Japanese are working on a venture, however, to replace silk with a plastic textal fibre that has no American counterpart.

The common belief is, that if we do help the Japanese to improve their manufacturing techniques and get on their feet, they can really develop into serious competition. Everyone in that country seems to have a will to work and a strong desire to accomplish something.

Mr. DeBell concluded that although the Japanese are very good at wood carving and making fine silverware, they have yet to prove any accomplishments in the field of plastics.

A very interesting discussion period followed, during which the speaker digressed to the social phases of Japanese life and particularly the cordial treatment that he received personally as a distinguished representative of American industry.

SALVAGING PLASTICS SCRAP

By WARREN A. SHARP

The Electronic Auto-Lite Co., Bay Mfg. Div.

As is customary in discussing molded plastics, the scrap in a molding plant may be divided into two classes: thermosetting and thermoplastic.

Salvage of thermosetting plastics, such as the phenolics, is quite limited. Rejected parts, flash, and transfer-mold culls may be ground to pass 16-mesh screen, and this ground powder mixed with a soft-flow, high resin-content phenolic compound in the ratio of one part of pulverized scrap to ten parts of virgin material. The resulting mixture molds satisfactorily in most molds, producing parts with slightly improved electrical properties, but which are slightly inferior in surface finish and mechanical strength. Such a procedure is economical only if the cost of grinding and mixing is less than about ten cents per pound of scrap, and if the molder has an outlet for at least 10,000 pounds per month of this mixture.

Salvaging of inserts from rejected phenolic parts may be economically desirable. The parts can be broken mechanically, and the inserts removed and cleaned by tumbling or by treatment in a hot 20% solution of sodium hydroxide (caustic soda). The hot caustic solution may also be used to soften the molded parts before removal of inserts, but this method cannot be used with aluminum inserts. Here again, the cost of salvage must be carefully studied and controlled.

In the case of injection-molded thermoplastics, the problem of scrap salvage is vitally important. For example, in a study of 105 molding jobs, it was found that an average of 22.3% of the weight of the molded shot, consists of sprues and runners. The following figures give the weight percent of sprues and runners from various molds:

Acrylics (82 molds)—23.8%
Cellulosics (15 molds)—15.5%
Polystyrene (8 molds)—14.6%

The percentage of sprue and runner scrap varies with the weight of the molded shot:

Shot Weight	Sprue Scrap
Under 4 oz.	31.6%
4 to 8 oz.	18.4%
Over 8 oz.	12.1%

This means that an average 22.3 pounds of sprue and runner scrap is produced from every 100 pounds of material fed to the machine. In addition, from 2-5% of molded parts produced are rejected for defects, such as flow lines, sink marks, burned spots, bubbles, unfilled cavities, etc. There is additional scrap resulting from mutilation or damage of molded parts in subsequent finishing operations, such as degating, sanding, decorating, and buffing. In the case of certain intricately decorated parts, the rejection may run as high as 10% of production. The overall rejection of molded parts averages 8 to 10%. Combining this with the sprue scrap, we find that out of every 100 pounds of material fed to injection machines, about 30 pounds must be processed as scrap.

Fortunately, a high percentage of this scrap can be salvaged efficiently. The sprue and runner scrap, comprising the largest part of the scrap, may be handled in several ways. The most efficient method is to clip or saw the parts from the cluster or shot, and immediately return the sprue and runner pieces back into the feed chute of the machine. If the pieces are clean, dry, and still warm from the mold, no trouble is encountered. Of course, the feed mechanism must be adjusted to compensate for the feed-back. On some makes of injection machines, it is not possible to return the sprue pieces to the feed chute ahead of the plunger, and in such cases the scrap must be granulated.

Regardless of the means of utilizing scrap, it is extremely important that the scrap be kept clean. This requires thorough and constant instruction of the operators, since the chief causes of contamination are hydraulic oil, shop dirt, grease, mold lubricants, and mixtures of different types of plastics. The following discussion deals chiefly with clear acrylic plastics, but the remarks apply to all thermoplastics to a lesser extent.

In degating or separation of the molded parts from the cluster, it is preferable to use a trim die or hand clippers. The use of bandsaws is not recommended, because the saw teeth become contaminated with the rubber composition on the bandsaw drive wheels, and this dirt may be transferred to the edges of the plastic being cut. Table or circular saws are less troublesome, but the rate of sawing must be slow enough to avoid burning the plastic, since burned edges will cause discoloration and streaks when the scrap is re-molded.

If the parts are quenched in water after removal from the mold, the water must be kept clean. Excessive use of mold lubricants may cause trouble, by causing streaks when clear scrap is re-molded. Silicone oil is the worst offender, but if used sparingly, mold lubricants are not objectionable.

Scrap from "air shots" or nozzle shots is usually contaminated, and should not be salvaged.

Granulating plastic scrap, as in a rotary blade cutter, is an important operation. In the case of clear acrylics, the presence of fines in the granulated powder is a serious problem, because the fines cause striations or yellowish streaks in molded parts. The fines heat faster in the injection cylinder, thus tending to overheat, and also tend to cling to the plunger. Virgin acrylic molding powder is supplied either diced or as a screened granulation; the diced material having substantially no fines passing 8-mesh screen, and the screened material containing 7-10% passing 8-mesh screen. The common rotary blade cutter gives a higher percentage of fines: a grinder screen having ¼" openings producing 28% fines, and a grinder screen having 5/16" openings producing about 17% fines, through 8-mesh screen. The percentage of fines can be reduced by using a grinder screen having openings of at least 3/8" diameter, preferably ½". Reducing the speed of the rotor to about 500 RPM will also reduce the percentage of fines, but this also diminishes the hourly capacity. The knife blades must be kept sharp, with a clearance of .008"-.010". The percentage of fines may also be reduced by preheating the scrap to 110°-120° F. just before granulating. The advantage of preheating is shown by the following sieve analyses of granulated acrylic scrap:

Scrap ground at room temperature: 67% on 8-mesh, 20% passing 12-M. Scrap preheated to 120° F.: 80% on 8-mesh, 12% passing 12M.

The scrap should not be heated above 120° F, as it may gum up in the granulator.

For best results, granulated acrylic scrap should be screened over 8 to 12-mesh screen. Such screened powder is fully equivalent to virgin material. Screening granulated scrap has the following advantages:

1. Eliminates streaks and striations in molded parts.
2. Provides uniform feeding in injection machines.
3. Provides uniform heating in the cylinder.
4. Screened powder does not pick up moisture as rapidly.

(Continued on page 9)

CONFERENCE PROGRAM ANNOUNCED

ABSTRACTS OF PAPERS—BIOGRAPHIES OF SPEAKERS

Dr. Howard E. Fritz To Speak on "THE RIGHT TO THINK (A SIXTH SENSE)"

Dr. Howard E. Fritz, vice president of the B. F. Goodrich Company, Akron, Ohio, in charge of that firm's research activities, is one of the best known technical men in the rubber industry.

Dr. Fritz came to B. F. Goodrich in 1925 from the engineering school faculty of Ohio State University where he was graduated in 1914 with a degree of bachelor of science. He received a degree in chemical engineering in 1920 and his doctor's degree the following year.

In addition to excelling as a student, Dr. Fritz found time to participate in athletics earning letters in football, basketball and baseball. Except for his great interest in chemistry he might have gone into professional baseball for he was considered to be of major league calibre.

Dr. Fritz has directed the development of a number of major processes and products during his more than 20 years in the rubber industry, including Koroseal, a verstile synthetic elastic material compounded of limestone, coke, and salt, and now used in a thousand products and industrial applications.

Dr. Fritz currently has the responsibility of directing the activities of one of the largest technical and research staffs in the rubber industry. His company was the first to establish a research laboratory in the rubber industry in 1895 and last year opened a new research center said to be the finest scientific workshop in existence.

MACHINERY FOR PLASTIC COATING

By A. J. GAIO

John Waldron Corporation
New Brunswick, New Jersey

Knowledge and experience acquired during the war in developing protective and decorative coatings has begun to bear results which few of us dreamed possible. Not only new materials, but modification and improvement in old ones are increasing with such rapidity that it is impossible for a person to keep thoroughly informed or to comprehend the total significance.

The rapid advance has made more pronounced the problem of selecting the coating machine most suited to applying a particular type of coating.

This address is designed to facilitate understanding of the four general types of coaters used for plastics, namely, knife, roll, air and cast. There are three types of knife coaters, the floating, blanket and rubber spreader; several types of roll-coaters-doctor kiss, roll kiss, edgewise and reverse roll; two types of cast coatings-casting drum and the casting belt; plus the recently developed air knife method.

RAW MATERIALS FOR THE PLASTICS INDUSTRY

By GILBERT THIESSEN

Koppers Company, Inc.,
Pittsburgh, Pa.

The plastics molding and fabricating industry is unique in that its raw materials are in themselves highly manufactured products. Any increase in supply of such materials depends on the growth of specialized industries which stand between them and the ultimate raw materials. Two plastics raw materials were made available on a large scale by wartime activities, phenol by World War I and styrene by World War II.

Raw materials supplies for plastics are now in balance. Adequate supplies exist for the expansion of all types other than the benzenoid types. When installed low-temperature coal-carbonization and coal hydrogenation plants can furnish needed benzenoid raw materials as off-shoots of liquid fuels production. Such possibilities are still only long-range possibilities.

Styrene made available by decreasing synthetic rubber manufacture has been absorbed by polystyrene manufacturers. The ingenuity of the synthetic organic chemical industry will assure adequate supplies of raw materials for the fast growing industry.

Rogers Plastic Corporation Offers Manufacturers' Molding Service and Ideal Distribution Arrangement

The management has been in the plastics industry since its pioneer days.

Rogers Plastic Corporation
West Warren, Mass.

FIELD MOLDING PROBLEMS AND THEIR SOLUTIONS

By C. J. SNYDER

Koppers Company, Inc.,
Pittsburgh, Pa.

Field molding problems can be expected upon the introduction of new plastics products, new dies, and new raw materials. Rapid advances in plastic materials, methods and molds in the past five years have dispelled many of the molder's and manufacturer's fears. However, the consuming public and the spirit of competition have further instilled inventors and manufacturers with the desire to produce larger and more complicated articles. Such products have consequently created new and different molding problems which in most cases are far more serious than any which have gone before; more serious and more costly because of the higher initial investment in dies and machines and the actual labor and material cost when these larger and more complicated parts must be scrapped. The discussion of such problems will be restricted to the field of injection molding of thermosplastics.

Molding problems can be expected not only when new dies are installed but also when old dies are rerun or when new molding materials are employed. Common troubles which arise are: (1) Short or incomplete shots, (2) Reject parts because of surface and interior marks, (3) Cracked or broken parts caused by sticking, and (4) Imperfections and cracks showing up after storage or use periods.

These can be caused by improper molding conditions, poorly designed dies, and the use of molding materials other than those for which the dies were designed, the use of scrap or rerun materials, using the molding machine beyond its capacity, or the use of molding machines in poor mechanical condition.

Of particular importance is the molding machine which should be kept in perfect condition and used within its limitations. The limits of the molding material must also be considered and attention given to the relief of strains by annealing.

Successful molding practice demands cooperation between the designer, tool maker, molder, and material supplier.

Stanley M. Cash

Paul L. Geiringer

S. D. Hiltebrandt

CONTINUOUS LAMINATING OF REINFORCED PLASTICS

By S. M. CASH
Continental Can Company
Cambridge, Ohio

Described will be reinforced plastics—what is in them and how they are made, pointing out how laminating plastics is different than laminating other materials. Laminating paper board, foils, and films requires simple gluing and drying, while with plastics a complex chemical reaction affects the bond.

Included will be a discussion of preparation of resins and fillers for production in laminate, mechanical equipment for laminating by the continous process, controls of successful production and evaluation of the properties of the finished laminate.

A native of Oakland, Illinois, Mr. Stanley M. Cash is a graduate of Purdue University with a degree in chemical engineering. He was chief chemist at the printing ink plant of Bemis Bros. Bag Co. for a number of years before becoming loading engineer in the Technical Department of Concan Ordinance Co. Inc. Prior to his present position as Manager Product development, Plastics Division, Continental Can Co., Inc., Cambridge, Ohio, he was a section chief in their Research Department in Chicago. He is a member of the American Chemical Society, of the Steering Committee for Reinforced Plastics of S. P. I. and of Alpha Chi Sigma.

FLUID HEATING & HIGH TEMPERATURE COOLING FOR CALENDER AND PRESSES

By PAUL L. GEIRINGER
American Hydrotherm Corp.
New York, N. Y.

Increased production speeds and closer quality control have created a difficult problem of maintaining uniform surface temperatures on calender rolls and presses. Peak demands on the boiler and frictional heat limit the speed of operation with steam and the uniformity of the resulting product. Automatic operation with steam is practically impossible.

The Hydrotherm Fluid Heating system, developed originally in Europe and perfected through numerous installations, provides uniform temperatures for either heating or cooling over a very wide range. Fluids are available for any temperature from minus 20 degrees F. to plus 700 degrees F. The use of a fluid system permits heating or controlled high-temperature cooling, or alternate heating and cooling with a short cycle of operation, with one heat carrier. Instalation can be made completely automatic with great economy in labor costs. Shock loads on the boiler, always prevalent with steam operation, are eliminated entirely by fluid heating and cooling; maintenance is also greatly reduced.

Paul L. Geiringer, chief engineer of the American Hydrotherm Corp., is a graduate of the Technical University of Vienna in mechanical engineering. He has been a licensed professional engineer in Europe for many years and since 1940 in the United States. Geiringer became a citizen of the United States in 1945. Most of his professional life has been spent in design and development of high-temperature fluid heating systems. He was engineer and partner of the original Caliqua Company in Berlin, Germany, who are responsible for all of the design and development of high-temperature fluid heating. In 1928 he opened the Caliqua Company in Austria. Prior to coming to the U.S.A. he served as consulting engineer for the Carrier Engineer Company, who are pioneers of high-temperature fluid heating in England since 1934. Up to the present time he has designed a great many industrial and district high-temperature fluid heating systems of all sizes.

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M. S. Greenhalgh

RECENT DEVELOPMENTS IN THE COMPRESSION MOLDING OF THERMOSETTING MATERIALS

By D. S. HILTEBRANT
General Industries, Inc.
Elyria, Ohio

Recent developments in the compression molding of thermosetting materials can be listed under three distinct categories:

A. New Materials Formulations.

B. Improved Molding Techniques.

C. Large Size Moldings.

Under the heading of new materials now being offered, there has recently been announced by the raw materials manufacturers three new types of materials. (1) The so called "low-pressure" materials, which are designed for the molding of large pieces at reduced pressures. (2) The fast curing phenolic materials which allow for much faster molding cycles by speeding the cure of the parts. (3) The alkyd materials which are so fast curing as to require completely new molding methods.

Probably the most important of the new molding techniques are: (1) The plunger transfer process and (2) The high speed pressing required for the alkyd materials.

Large size molding is self explanatory, and includes molding on large presses from 1,000 to 2,000 tons, and involving parts from 10 to 35 pounds.

All of these developments have resulted in a widening of the uses of thermosetting plastics, which should react favorably to the advancement of the industry.

L. F. Street

Mr. S. D. Hiltebrandt is the Sales Manager, Molded Plastics Division, The General Industries Company, Elyria, Ohio. He was educated at Cornell University as an administrative engineer. He was a sales manager with Bakelite Corporation for many years. He is also a charter member of S. P. E. and served as president of the Detroit Section in 1945.

EXTRUSION NEEDS

By M. S. GREENHALGH
General Electric Company
Bridgeport, Conn.

Every development chemist, process, methods or manufacturing engineer who is connected with the extrusion in any form of either plastic or rubber compounds is cognizant of the need for proper and efficient extrusion equipment.

Since the advent of vinyl compounds the extruding business has grown by leaps and bounds. We have progressed from the old rubber extruder to the extended, double and multi-barreled versions—from the old food chopper screw to the torpedo, constant pitch, diminishing depth types prevalent today.

At the same time improvements have been made on the plastics compounds themselves. Today we have faster and easier processing resins. It is necessary to take full advantage of these resins for economical reasons. The technique of feeding the extruder in many cases has been changed from mill-fed to granulated and finally to powder mix. Pigments, lubricants, fillers and plasticizers together with the base resins or compounds are being added to the extruder directly.

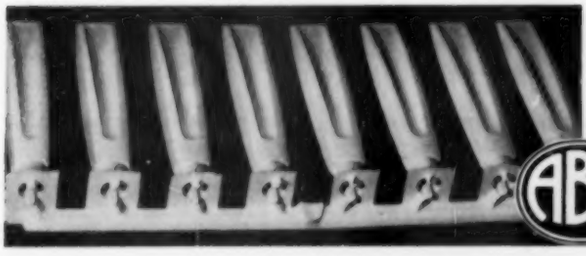
Merril J. Ainsworth

In short, the extruder is being required to perform tasks which hitherto have been performed in various types of mixing equipment.

There are, however, many questions still unanswered as to the proper and most efficient extruded design. It is felt by many that the equipment manufacturer has not kept abreast of the needs of the industry. Perhaps it is also the fault of the industry itself for not properly presenting the problem on a cooperative basis to the equipment manufacturer.

This need not only covers the fundamental design of the extruder such as type of screw, size and external contour of head, size and shape of feed hole, centering set-up, type of breaker plate, heating and cooling facilities, etc., but also a design which would be more efficient from a manufacturing standpoint of simplification of operation by the factory operator.

Mr. M. S. Greenhalgh was born in Rhode Island and educated at the University of Bridgeport, majoring in chemical engineering. Joining the General Electric Company at Bridgeport, Connecticut in 1933, he was transferred to the Laboratory in 1935 where today he is Section Engineer in charge of plastics. In 1948 he won the Charles A. Coffin award given by the company for outstanding contribution in advancement of his work. For the past ten years he has been Professor of Chemistry at the University of Bridgeport in the Evening Division where he has lectured on plastics and rubbers and conducted classes in chemistry. He is a member of the American Chemical Society and President of the Connecticut Section of S. P. E.



Intricate Molds? The mold for the brush handles shown at the left *(courtesy Fuller Brush Company)* required not only intricate design, but ultra-smooth finish to meet today's mass production needs. Our sound engineering experience and modern equipment and methods are the answer. *WRITE FOR LITERATURE.*

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Elmer E. Mills

DOUBLE SCREW MIXER

By L. F. STREET

Welding Engineers, Inc., Norristown, Pa.

The Compound-Extruder manufactured by Welding Engineers, Inc. was in the process of development for years. The company manufactured extruders for use on catalyst materials as early as 1934 and installed several machines in the early part of the war for making catalysts for the manufacture of aviation gasoline.

This work led to the development of machines for handling plastics, and in the course of research work, the Compounder-Extruder was developed. This machine has two worms lying side by side with the peripheries of the flights adjacent and the machine is so designed as to give plastic materials fed to it a thorough compounding, plasticizing and mixing as they pass through. Equipment of this type has been successfully used on vinyl phonograph record material, compounding and making preforms, elastomeric vinyls such as garden hose, tapes, floor tile and wire coating, color dispersion in polystyrene when clear granules are pre-mixed with color and formed into pellets or extruded shapes at high rates. Numerous other materials have been processed such as Saran, the plasticizing of Type 6 Nylon and reclamation of scrap materials such as vinyl garden hose, vinyl film, polyethene film, ethylcellulose refrigerator strips, cellulose acetate butyrate tubing, etc.

Applications are suitable both for compounding and extruding, and for preparation of material for the molder or custom compounder.

Mr. L. F. Street is Research Engineer with Welding Engineers, Inc., Norristown, Pa. His experience with plastic handling equipment was gained in his research work on the companies machinery. He participated in the research and development work on W. E. I. Compounder-Extruder and since the summer of 1948, has continued that work as Research Engineer.

T. J. Kerr

THE ELECTROSOL PROCESS

By MERRILL J. AINSWORTH

Engineering Consultant Northridge, Calif.

Static Electricity has for years created serious difficulties in the plastics, textile and paper industries.

Problems involving static electricity and plastics generally may be considered in four categories; (1) handling and fabricating plastics materials; (2) mechanical performance of the plastic article being manufactured; (3) appearance of the material of the manufactures article; (4) hazard to materials, facilities and personnel.

To be completely effective in elimination or control of static electricity in plastics, the means employed must prevent the accumulation of an electrostatic charge on the parts or materials involved, be relatively permanent in its effect, be imprevious to varying conditions of temperature and humidity, be unaffected by normal handling and other processes, be of such nature that it does not damage the appearance of the article or material processed, be composed as to be inert in its effects on normal paints, laquers, and enamels, be of such nature as to remain inert in effect on all plastic materials, be of such low cost as to permit ready use and be a process or treatment that does not add hazards of its own.

Such a process has emerged from the laboratory and is finding ready applications in the plastics industry. It will be commercially identified as the Electrosol Process. The process consists of a two stage dip or spray application of two successive formulations.

The process and its application will be discussed in some detail.

Mr. Merrill J. Ainsworth has had past association with, or has been engaged by, Aircraft Industries Corp., Glendale, Calif.; Douglas Aircraft Co. facilities at Santa Monica, El Segundo and Long Beach, Calif.; Texas A. & M. College; U. S. Naval Air Station, San Diego, and Bendix Corporation Research, North Hollywood, Calif. He has been an active engineering consultant on industrial electronic problems since 1945. He holds Federal Communications First Class Commercial License validated for broadcasting, communications facsimile and television. He is a certified Professional Electrical Engineer of the State of California.

Hans E. Buecken

CONSTRUCTIVE IMPROVEMENTS IN DESIGN OF INJECTION MOLDING EQUIPMENT FROM THE USERS STANDPOINT

By ELMER E. MILLS

Elmer E. Mills, Corp., Chicago, Illinois

The need for safer machines, both for personnel and molds is emphasized. Machines should also be designed to stress economy of operation as well as for economy of provided tooling. This could be accomplished by much more flexibility in operation than is available on present day equipment. Certain changes could be made in equipment to simplify and reduce maintenance costs.

Mr. Elmer E. Mills of Elmer E. Mills Corporation, Chicago, Illinois, is a native of Chicago. He studied chemical engineering at the University of Chicago. He did sales engineering work for many years and probably was the first man in the country to solicit custom injection molding business. He started his own injection molding plant in 1937.

CONFERENCE PROGRAM

(Continued)

THE PLASTIC CALENDER AND ITS AUXILIARY EQUIPMENT

By T. J. KERR

Yardley Industries, Inc., Chicago, Illinois

Some of the ways in which the rubber calender could be improved for greater utility with plastic will be discussed.

Rubber stocks processed on the calender retain considerable nerve, with the processing at low enough temperatures that the stock has greater viscosity. This procedure requires a great deal of horsepower, while the minimum viscosity, semi-molten and molten state of processing plastics requires less power. This suggests the possibility of designing entirely new equipment for plastics using smaller rolls to form the sheet, and avoid the heavy construction of present calenders.

Almost all manufacturers pre-blend film and sheeting stock before Banbury mixing, in which case function of the mixer becomes primarily that of a heat-exchanger to convert the blended mixture into a plastic mass. This immediately raises the question, "Is this massive machine the most practical and economical heat-exchanger for the purpose?"

Some of the problems involving auxiliary equipment, especially those used to produce decorative effects, will be discussed. Much can be done to adapt the present embossing, printing and coating machinery to the handling of unsupported film.

Mr. Thomas J. Kerr graduated from Clarkson College of Technology, Potsdam, N. Y. as a Chemical Engineer. He worked as a chemist for Dutchess Bleachery in Wappingers Falls, N. Y. for four years. In the fifteen years he was with Columbus Coated Fabrics Corp., Columbus, Ohio, he worked up from chemist to Chemical Superintendent. And after an absence of two years joined them again for a couple of years as Superintendent and Director of Sales of the Calender Division. Before his present position with Yardley Industries, Inc., Chicago, he managed the Plastics Division of Southbridge Finishing Co. in Southbridge, Mass. During the war he served with the Quartermaster Corp as consultant on coated fabrics and related problems.

INJECTION MOLDING — PRE-PLASTICIZED THERMOPLASTIC AND ITS ADVANTAGES

By JAMES W. HENDRY

Jackson & Church Co. Saginaw, Mich.

The plastic industry leans more and more to larger parts with a great deal greater projected area. Therefore, it is necessary for the machinery people to design machines which will not require the tremendous pressures for injecting and clamping to obtain these large parts. To this end, we have designed this machine to do these things. Also we wished to be able to compound materials such as cellulose acetate, polyvinyl chloride and ethyl cellulose. This would mean a reduction in the original cost of the plastic material as supplied by the manufactures of these thermoplastic materials to the molder.

Secondly, we have worked with the thought in mind of being able to color polystyrene and acrylic. To date we have compounded polyvinyl chloride, cellulose acetate, ethyl cellulose and colored styrene very successfully. We have not colored any acrylic, but do hope to do so. This results in the savings in the cost of virgin material, approximately 5c per pound in polystyrene, and 6 to 7c per pound in acetate and vinylite. Therefore, one of the aims in pre-plasticizing machines of our type is to cut the raw material cost.

Third, to give better moldings, by using low pressures which are exerted against the material proper. Approximately, 3100 pounds per square inch is used in polystyrene molding, as against, 18,000 to 25,000 pounds per square inch on a conventional machine. It stands to reason that by using lower injection pressure, the pressure is not put into the cavities proper, and therefore the strains in the part are not as great, the flexing and stretching of the cavities is not as great, and completely condensed moldings strain-free with accurate parts are obtained one shot after the other.

Fourth, faster cycles. As we all know, the limiting feature in all conventional molding machines is the injection chamber, and its complete inability to plasticize the material fast enough. There are many cases where the injection chamber can plasticize as fast as the mold cares to give up the part. However, there are many cases where the molding is governed by the injection chamber. This is not so in our machine. When the mold is ready to give up its part, the next shot is completely ready to be injected into the cavity.

The fifth and final point kept in mind, is the cost of the machine. We have tried to keep this down to a minimum, yet not reduce the quality of our equipment.

CONTROVERSIAL POINTS ON EXTRUSION

By HANS E. BUECKEN

National Machinery Corporation Akron, Ohio

Ever since the first few plastics extruders have been in operation controversial opinions in regard to the design and operation of an extruder have occured. But today with thousands of these machines in the field and a growing competition of their manufacturers, "Controversial Points on Extrusion" have grown from a "toying" infant to a "debatable" adult. Some of these points of most importance, that will be discussed, are mentioned below.

SCREWS—Types—Torpedo type vs. full fledged screw; double flighted, single into double or double into single flighted vs. screws with low compression ratio; cooling vs. heating and types of cooling and heating (zoned); constant root diameter vs. decreasing or increasing root diameter; constant pitch vs. decreasing or increasing pitch and the combination of either; screw efficiency.

Materials—Stainless steel, Z-nickel, Has elloy vs. steel alloy chrome plated; flight lands covered with Stellite or other hard facing materials or bearing (anti-friction) material vs. flame hardening and swedging (as in Z-nickel).

LINERS—Types—Liners with smooth bores vs. grooved bores, either full or partial length, spirally or straight grooved.

Materials—Nitrited Nitrally, Xaloy (306), Hastelloy (A&B), Stellited (Stoody No. 6), colmony sprayed and Z-nickel liners vs. steel chrome plated liners.

CYLINDERS—Types—Oil and steam heated vs. electrically heated cylinders; balanced heat control; multiple but narrow heating zones vs. limited number of wider heating zones; long vs. short cylinders; hopper styles; band heaters vs. strip-heaters application; of screens and breaker plates vs. torpedo.

DIES—Types—Carefully streamlined die openings and cavaties vs. single plate dies with large supply cavity. **Materials**—Stainless steel vs. tool steel (hardened).

FEEDING—Conditions of Compounds—Powder vs. densified compounds (granules, pellets) vs. pre-densified materials; predensification vs. densification in screw; hot (of the mill) strip feeding vs. cold (stored) strip feeding; starved feed vs. normal feed and stuffers.

PRE HEATING—Types—Oven-infrared, mill and high frequency.

CYLINDER TEMPERATURES—Natural temperature, gradient vs. forced gradient; counter flow vs. parallel

flow of heat; frictional heat vs. conducted heat and their combination.

TEMPERATURE CONTROLS- Types—Proportioning pyrometer or potentiometer type vs. straight "off-on" thermocouple type temperature controllers.

DRIVES—Types—Constant speed vs. variable speed drives, DC motors, AC-DC motor generators, dynamic clutches, mechanical variable speed drives, hydraulic type drives and electronic variable speed drives.

OTHER TYPES OF EXTRUDERS—Single vs. double type; the extruder as a coumpounder vs. other compounders.

Mr. H. E. Buecken is Manager Plastics Machinery Division, National Rubber Machinery Company. With considerable experience in various phases of engineering in the United States, Mr. Buecken is also well acquainted with European engineering technics and outlooks by virtue of his education at the University of Aachen in his native city of Aachen, Germany. After completion of a mechanical and aeronautical engineering education in Germany, Mr. Buecken came to the United States in 1930 on a scholarship to the Daniel Guggenheim School of Aeronautics at the California Institute of Technology, Pasadena, California. Completing his special training at the Institute, the following year he accepted the position of Chief Engineer with the Daniel Guggenheim Airship Institute, Akron, Ohio.

Mr. Buecken participates actively in the affairs of the plastics industry outside his work, and is a voting member of the Society of the Plastics Industry and a member of the Society of Plastics Engineers.

MORSE HAS NEW JOB

A. REYNOLDS (REN) MORSE has left Reed Prentice after 10 years as Sales Engineer in their Cleveland Office. He will associate himself with Injection Molders Supply Company, and specialize in problems incident to the design, selection, and service of injection molding machines. Injection Molders Supply Company was founded by Mr. Morse to develop specialized accessories for the injection molder, and to act as a clearing house for used machines.

Mr. Morse will maintain an office in The Penton Building, Cleveland 13, Ohio, and be available to discuss injection equipment problems with molders who are puzzled by the competing claims of the various manufacturers. Mr. Morse is well-known in the injection industry for his various articles in trade journals on current topics.

SALVAGING

(Continued from page 3)

5. Screened powder permits cycles which are about 12% faster than unscreened powder.

An ideal process of salvaging scrap is through use of a pelletizing extruder. This unit gives a product in pellet form with no fines, and also serves to homogenize and blend the scrap. This homogenizing action is especially desirable in salvaging plastics which contain plasticizers.

Granulated scrap from unplasticized plastics, such as acrylics and polystyrene, has properties almost identical with those of the virgin materials. However, the cellulosics and elastomeric vinyls have a tendency to become harder when molded, probably due to loss of plasticizer. In one case, a cellulosic material originally having an MS flow, was found to be about MH flow when the molding scrap was granulated and remolded. Similarly, an elastomeric vinyl compound upon re-molding changed its durometer hardness from 60-65 to 65-70.

Granulated scrap can be molded as ground, or it can be mixed with virgin material. Although the latter procedure provides somewhat more uniformity in molding, it also may cause contamination of the virgin ma-

(Continued on page 10)

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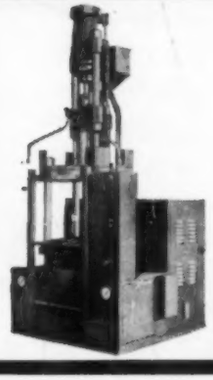
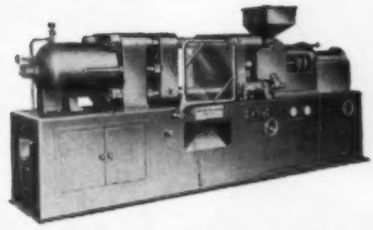
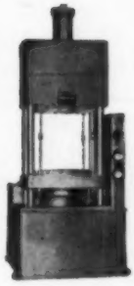
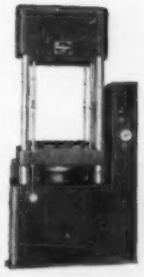

Vertical Injection Molding Machines 1, 2, and 4 Ounces


Horizontal Injection Molding Machines 8 to 80 Ounces

Preform Tableting Machines 10 and 100 Tons


Transfer Molding Machines 30 to 1200 Tons

General Purpose Presses 20 to 200 Tons


Compression Molding Presses 50 to 1200 Tons

SALVAGING

(Continued from page 9)

terial if the scrap is not perfectly clean. Generally, it is preferable to use the granulated scrap "as is," on some molding job where appearance is not critical.

Obviously, it is important to keep plastic scrap of one type of material separate from that of another type. The granulator operator can separate sprue and runner pieces readily by a simple expedient. A code letter, such as "A" for cellulose acetate, "B" for cellulose acetate-butyrate, "S" for polystyrene, and "M" for acrylics, can be stamped on the cold slug ejector pin in the mold. Each sprue piece is then automatically marked in the molding process, so that the operator can easily identify and sort various scrap pieces.

Decorated plastic parts usually cannot be salvaged economically. Parts decorated with hot-leaf stamping can be salvaged only by sanding off the hot-stamped color. There is no completely satisfactory way of removing paint and lacquer from decorated plastics without seriously affecting the parts. Most paint films can be stripped off with suitable solvents, and the stripped plastic can be granulated and re-molded. Plated plastics which become mutilated or damaged may be salvaged by suitable chemical stripping solutions, which remove the paint mechanically, as by sanding or sandblasting. In general, salvage of defective painted parts is highly specialized, and the salvage costs must be carefully controlled.

In a large molding plant, it is advisable to set up a salvage department, in which all scrap and rejects are handled, sorted, and reclaimed. This procedure also provides a constant check on the source and amount of rejects, as well as keeping overall operating losses at a minimum.

NOMA ADVANCES

The Noma Electric Corporation of New York, recently announced changes in the management of their Plastics Division at Holyoke, Massachusetts.

Effective July 1st, 1949, **Mr. George J. Wexler,** formerly Manager of the Decorative Lighting Division assumed the duties of General Manager of both the Plastics Division and the Decorative Lighting Division.

Mr. **Richard J. Plichta** has been made Superintendent of the Molding Department.

Mr. **George W. Martin** has been made Superintendent of Tools and Engineering.

NEWARK HEARS THOMAS & GOSS

By PETER W. SIMMONS

The November dinner meeting of the Newark Section took place at the Military Park Hotel on Wednesday Evening November 9th and in attendance were approximately 75 to 85 members and guests.

After dinner Mr. Islyn Thomas of Thomas Manufacturing Company gave a brief discussion on his impressions gained as a result of his recent European trip, which was climaxed by his attendance at the plastic show in Italy.

Concerning Italy, it was Mr. Thomas' belief that they were progressing quite rapidly in the plastics field and that within a few years Italy would no longer be importing any plastic items to fill their requirements from the United States or other countries. He stated that as far as general conditions in the European plastics industry are concerned, the principles of mass production and volume distribution have not yet been accepted by most of the plastic molders.

Mr. Art Warner of Federal Telephone and Radio Corporation, who by

(Continued on page 13)

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TENTATIVE SCHEDULE FOR CONFERENCE

TUESDAY, JANUARY 10, 1950

4:00 PM to 9:00 PM—Registration

WEDNESDAY, JANUARY 11

8:00 Registration

10:00 Official Opening of the Conference

10:30 **T. J. Kerr** (Yardley Industries, Inc.) The Plastic Calender and Its Auxiliary Equipment

11:00 **Paul L. Geiringer** (American Hyrotherm Corp.) Calender Temperature Control

11:30 **Merrill J. Ainsworth** (Engineering Consultant) The Electrosol Process

12:15 Luncheon—**Dr. Gilbert Thiessen,** (Koppers Co., Inc.) guest speaker

2:00 **Elmer E. Mills** (Elmer E. Mills Corp.) Constructive Improvements in Injection Molding Equipment—The Molders Viewpoint

2:30 **J. L. Morrison** (Detroit Mold Engineering Co.) Mold Designs

3:00 **S. D. Hiltebrant** (The General Industries Co.) Developments in Thermosetting Molding

3:30 **James W. Hendry** (Jackson & Church Company) New Developments in Injection Molding Machines, 8-oz, Capacity and Larger

4:00 **C. J. Snyder** (Koppers Company, Inc.) Field Molding Problems and Their Solution

4:40 **W. P. Gobeille** (Nash-Kelvinator Corp.) Pin Point Gating

THURSDAY, JANUARY 12

9:30 **To be announced** (Bakelite Corp.) Applications for Low Molecular Weight Polyethylene

10:00 **Stanley M. Cash** (Continental Can Co.) Continuous Laminating of Reinforced Plastics

10:30 **A. J. Gaio** (John Waldron Corp.) Coating and Casting Machines for Plastic Latices and Solutions, Organosols and Plastisols

11:00 **T. F. Walsh** (Sill Paper Company) Heating Units

11:30 **Edward J. Wohlfarth** (Mayflower Electronic Devices Company) Electronic Heating Devices

1:15 Annual Business Meeting of Members

3:00 to 5:00 Technical Papers to be announced

6:30 Cocktails

7:30 Banquet—**Dr. Howard E. Fritz** (B. F. Goodrich Co.), Guest speaker. Presentation of Awards, Dancing

FRIDAY, JANUARY 13, 1950

10:00 **M. S. Greenhalgh** (General Electric Company) Extrusion Needs

10:30 **L. F. Street** (Welding Engineers, Inc.) Double Screw Mixer

11:00 **Hans E. Buecken** (National Rubber Machinery Co.) Controversial Points of Extrusions

CLEVELAND ATTRACTIONS DURING THE CONVENTION

Hockey—January 11, Cleveland Barons vs. St. Louis Flyers at the Arena; January 14, Cleveland Barons vs. Indianapolis Caps at the Arena.

Basketball—January 13, John Carroll vs. Notre Dame and Baldwin-Wallace vs. Westminster at the Arena

Music—Cleveland Symphony, Matinee Performances, George Szell, Conductor at Severance Hall, January 12 and 14.

Drama—Legitimate stage presentations at the Hanna Theater, Cleveland Playhouse and Lakewood Little Theater

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INDEX TO VOLUME FIVE

AUTHORS

Ainsworth, Merrill J. Oct. 1949
Electrosal Process (The)

Bailey, W. R. Sept. 1949
Washington School of Plastics

Beck, Ronald D. Feb. 1949 (2nd Prize Paper)
Hot Air Preheating of Compression Molding Powders: A Method and Apparatus

Boulais, John M. May 1949
Buyer Looks at Plastics (The)

DeBell, John M. April, 1949
Plastics Review

Formo, Jerome June and Nov. 1949
Quality Control

Francis, Richard J. Nov. 1949
Plastics Moldings—A Survey of Methods.

Gerow, M. R. Feb. 1949
Reports of the National Professional Activities Committee

Kline, Harry & Committee May 1949
Report of the Laminating Committee of the SPE (Bibliography of Laminating Procedure and Practice)

Kline, Gordon May 1949
History of Baltimore-Washington

Kosy, Walter Feb. 1949
Plastics In Detroit

Merrill, A. M. March 1949
History (of the) New York Section

Morse, A. R. Jan. 1949 (1st Prize Paper)
Empirical Factors in Injection Machine Design

Sharp, Warren A. Dec. 1949
Salvaging Plastic Scrap

Stubblebine, Warren (Dr.) Mar. 1949
Quartermaster Research Program on Plastic Films and Coated Fabrics (The)

Totten, J. K. Feb. 1949
Automotive End-Use Specifications, Report of Prof. Activities, Automotive Committee

ARTICLES

Automotive End-Use Specifications, Report of Prof. Activities, Automotive Committee Feb. 1949
Totten, J. K.

Baltimore-Washington (History of) May 1949
Kline, Gordon

Buyer Looks at Plastics (The) May 1949
Boulais, John M.

Electrosal Process (The) Oct. 1949
Ainsworth, Merrill J.

Empirical Factors in Injection Machine Design Jan. 1949
Morse, A. R. (1st Prize Paper)

Hot Air Preheating of Compression Molding Powders: A Method and Apparatus Feb. 1949
Beck, Ronald D. (2nd Prize Paper)

Laminating Committee of the SPE (Report of the) (Bibliography of Laminating Procedure and Practice) May 1949
Kline, Harry & Committee

National Professional Activities Committee (Reports of the) Feb. 1949
Gerow, M. R.

New York Section (History of the) March 1949
Merrill, A. M.

Plastics In Detroit Feb. 1949
Kosy Walter

Plastics Moldings—A survey of Methods Nov. 1949
Francis, Richard J.

Plastics Review April 1949
DeBell, John M.

Quality Control June & Nov. 1949
Formo, Jerome

Quartermaster Research Program on Plastic Films and coated Fabrics (The) Mar. 1949
Stubblebine, Warren (Dr.)

Salvaging Plastic Scrap Dec. 1949
Sharp. Warren A.

School of Plastics, Washington Sept. 1949
Bailey, W. R.

SECTION REPORTS HAVING TECHNICAL INFORMATION

(Author is Author of the reports and not of the paper)

Acetate Butyrate uses in Films, **Packages and Metal** Laminate Nov. 1949
Harry C. Williams, Jr.

Alkyds, Detroit Hears Bigelow on April 1949
Walter Kozy

Beryllium Plastic Molds—Detroit, Properties of March 1949
Walter Kozy

Improvements of Design at Philly, Sunberg **Speaks** on May 1949
H. S. Stevenson

Design at Quebec, Veverit on Plastics April 1949
George H. Martin

Engineering Education in Plastics (Newark Guest Program Features Exhibit Over 1000 Hear McCann and Blount) March 1949
Peter W. Simmons

Fibers at Philly Nov. 1949
Richard B. Bishop

Finishing Symposium at W. N. E. Has Three Speakers Jan. 1949
George W. Martin

Hydraulic Presses—New York, Selection and Maintenance of May 1949
Arthur W. Merrill

Injection Molding of Nylon at New York, Akin Speaks on April 1949
Arthur M. Merrill

High Capacity Injection Molding Machines, Barrett at S. Cal. Oct. 1949
John Delmonte

Life Insurance in Business, Northern Indiana March 1949
Wayne Pribble

M B S Casting Resins Discussed at Philly Oct. 1949
H. S. Stevenson

Melamine Tableware Discussed, New York Plans for 1949 Feb. 1949
Arthur M. Merrill

Mold Steels Discussed at Newark, Choice of Jan. 1949
Harold Schor

Mold Steels and Design Ohio Topics April 1949

W. N. E. Talks **Molds** Feb. 1949
T. W. Noble

Molds and Molding are New York Topic March 1949
Arthur M. Merrill

Pin Point Gating is Topic at W. N. E. Nov. 1949
George W. Martin

TOEPEL DISCUSSES SCREWS

By ARTHUR M. MERRILL

The New York Section held another highly successful dinner meeting on November 16 at the Hotel Shelburne. The attendance of 59 members and guests attested to the fact that the Section is on the up-grade again as the result of the past year's campaign to improve the quality of meetings and stimulate interest in the Section's activities.

Featured speaker at the technical session, following a cocktail hour, dinner, and business meeting, was Walter A. Toepel, Parker-Kalon Corp., whose topic was "Fastening Devices for Plastics." The talk covered self-tapping and drive screws and their use in fastening plastics to one another and to other materials.

The original Parker-Kalon Type A screw was a gimlet type with a coarse thread. This screw was designed for use with sheet metals, non-ferrous castings, resin-impregnated plywood, asbestos compositions, etc., and was not suitable for plastics. For use with plastics the company developed the Type Z screw having a finer thread pitch and a leading edge on the thread. Although both Types A and Z are called self-tapping screws, they are actually forming screws and have no thread tapping action.

The Type Z screw was not suitable for use with plastics of a friable or brittle nature, and the Type F screw was developed for such applications. The Type F is a self-tapping screw of standard machine form, with a slightly tapered point and a five-flute tap. Mr. Toepel said that the Types F and Z screws are suitable for about 90% of plastics fastening applications, the balance being handled by the Type F-Z screw. As its name implies, the Type F-Z combines the cutting flutes of the Type F with the wider thread spacing of the Type Z.

Screw holes in plastic parts may either be molded in or drilled. If the material is brittle, molded holes should be formed with a rounded chamfer and drilled holes should be machine chamfered to minimize spalling. In all cases, there are definite requirements as to hole diameter, depth and taper which should be discussed with the screw manufacturer while the product is still in the design stage. The speaker emphasized that the diameter of the screw boss should be equal to one and one-half times the screw diameter, and space left for chip clearance at the bottom of the screw hole.

After a brief description of screw manufacturing methods, Mr. Toepel noted that the practical use of a screw for fastening purposes depends on whether a satisfactory tightening torque can be obtained in the specific application.

NEWARK

(Continued from page 10)

virtue of an extended stay in England and various trips to the continent has a very thorough knowledge of the plastics picture in Europe, gave some very interesting comments from the floor following Mr. Islyn Thomas' talk.

Mr. Wyman Goss of the General Electric Company was the second speaker of the evening and he gave a very interesting talk centering around the developments in the past ten years in phenolic molding materials. He stressed quite sharply the importance of rubber-phenolic blends with wood flour, cotton flock, fabric and asbestos. Mr. Goss stated the improved impact strength of these compounds is expected to make them suitable for many industrial applications, particularly in the field of communications.

VOLUME V INDEX

(Concluded)

Plastics In Communication Industry, Newark Hears Burns and Beekman — Feb. 1949
Peter W. Simmons

Local Plastics Activities and Personalities, Wilcox at Upper Midwest Sketches of — April 1949
E. M. Ulrich

Plastics In Europe and **Molding** are Discussed — April 1947
George W. Martin

Packaging Discussed at New York, Plastics in — Jan. 1949
Arthur M. Merrill

Plastic Panels from Wood, New Orleans Hears Boehm — Apr. 1949
Ralph F. Chambers

Pliolite at Toledo — March 1949
George Taylor

Polyethylene Data Use Described — May 1949
George A. Taylor

Preheat is Primary Problem in Automatic Transfer Molding — May 1949
George W. Martin

Reclaiming Scrap, Detroit Hears Warren Sharp — Oct. 1949
Walter Kozy

Research Potential for Plastics Manufacturing is Topic at New Orleans — Jan. 1949

S-Polymers Are New York Topic — June 1949
Arthur M. Merrill

Styrene Extrusion — Oct. 1949
Peter W. Simmons

Styrene Injection Molding Design Topic at New York—Newark Meeting — Nov. 1949
Arthur M. Merrill

Thermoplastic Molding Powders new at Dow. Upper-Midwest — May 1949
E. W. Ulrich

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★ COMPLETE ENGINEERING AND DESIGN SERVICE
★ MOLDS MADE IN OUR PLANT

As a pioneer in the plastic industry, Imperial Molded has acquired broad experience in handling of inserts, molding of threads, making deep draws, side-cores, horizontal bosses, etc. Much of the work, involving the solution of tough problems, has resulted in new advances in compression molding accuracy on a commercial basis.
Ask for Bulletin K-200 which is a brief picture story of how Imperial Molded operates. Also Bulletin K-100 showing stock pulls, knobs and handles.

IMPERIAL MOLDED PRODUCTS CORP.
L. H. Amrine, President
2961 West Harrison Street, Chicago 12, Illinois

S.P.E. Journal

Official Publication of The Society of Plastics Engineers, Inc.
409 Security Bank Building
Athens, Ohio

POSTMASTER: Forwarding and Return Postage Guaranteed.

Section Notes

The **PHILADELPHIA SECTION** members entertained their wives with an evening of fun and gifts at the Hotel Penn Sheraton on December 5. The feature of the evening was a humorous personal slant on the history of the duPont company, by James Q. duPont. 1950 officers for the section are: H. S. Stevenson, President; G. W. Gaylor, Vice President; D. I. Yarnall Secretary; R. B. Bishop, Treasurer; W. O. Bracken, National Director.

The **NEW ORLEANS SECTION** elected Ralph Chambers as President, Frank Pershall as Vice President, and Leon Godchaux, II as Secretary-Treasurer at its regular meeting held on November 22. Mr. Harold Levey will continue as National Director.

"Television" was the subject at the **BUFFALO SECTION** meeting on November 16 meeting in the Kleinhans Music Hall in Buffalo. Mr. N. E. Strieby, Staff Executive of the Long Lines Division of the American Telephone and Telegraph Company delivered the address.

The **WESTERN NEW ENGLAND SECTION** held a symposium on thermoplastic and thermosetting molding techniques, design, tooling problems and trouble shooting. The panel consisted of eight experts. Prizes were given to the ten best questions submitted before the meeting on December 7. Additional prizes were given if the questions stumped the experts. There were door prizes for members and guests.

THE BALTIMORE WASHINGTON SECTION met in the Materials Laboratory of the National Bureau of Standards to hear P. J. Franklin and D. M. French of the Electronics Division of the Bureau give a review of the development of NBS casting resin on November 22. On December 6 they met in Maryland Hall at John Hopkins University for a symposium on extrusion, getting the viewpoints from the angles of the materials manufacturer, the equipment maker and the extruder.

The **EASTERN NEW ENGLAND SECTION** heard W. J. Connelly, Bakelite Corp., speak of "Applications of Bakelite and Vinyl Plastics" at their meeting on December 1 in the Hotel Vendome, Boston. Mr. Connelly has had many years experience in the plastics industry and his talk vividly described the reasons for the terrific increase in the amount of vinyl materials used today.

The October meeting of the **SOUTH TEXAS SECTION**, sponsored by Carbide and Carbon Chemicals Corp., drew an attendance of 90 members and guests—three times the section membership. On November 16, the Dow Chemical Co. in the person of R. W. Van Sickle entertained with an illustrated talk and exhibit on New Developments in the Injection Molding of Polystyrene at Kelly's Dining room. The section will elect 1950 officers at the meeting to be held January 18, 1950.

The **SAINT LOUIS SECTION** met at the Melbourne Hotel on November 14, to hear Mr. F. W. Tetzlaff and Mr. N. G. Wedemeyer of Rohm & Haas speak on "Trends in Acrylic Plastics." Following the speech the members visited a private showing of the Plexiglas Store Show at the Statler Hotel.

Mr. J. H. DuBois spoke at the **UPPER MIDWEST SECTION** meeting on November 14. Mr. DuBois is with Shaw Insulator Co. and he spoke on "Transfer Molding" and "The National S.P.E." On December 12, Mr. William Wall, E. I. duPont deNemours Co., Inc., spoke on "Nylon Molding."

On November 15, the **ROCHESTER SECTION** met at the Redman's Club for a turkey dinner. Mr. Vernon M. Howe, Eastman Kodak Company, spoke on "Cellulose Ester Film and Sheets." Thumbnail sketches were given by Garson Meyer, Edwin S. Mix, George A. Neward and Edwin Palmer.

The **ONTARION SECTION** met on November 7 and elected their officers and committee chairmen. They are as follows: President, Finley W. McEwen, Duplate Canada Limited, Oshawa; Vice President, Harry W. Hutton, Prophylactic Brush Co., Ltd., Toronto; Secretary-Treasurer, J. N. Kempf, Duplate Canada Ltd., Oshawa; National Director, Mr. McEwen; the rest of the section board, G. W. Mitchell, W. C. Lacroix, J. F. Schneider, D. M. Taylor. The committee chairmen are: G. W. Mitchell, B. F. Goodrich Chemical Co., Toronto, Membership; Credentials, W. H. Hutton; Program, W. C. Lacroix; House, J. F. Schneider, Reliable Plastics Limited, Toronto; D. M. Taylor, Editor, Canadian Plastics as Publicity, and J. N. Kempf as SPE J0URNAL reporter.

The **CENTRAL OHIO SECTION** met with the Columbus Technical Counsel on November 18 for a discussion of "Building Codes for Columbus." The panel was made up of: Moderator, Delmar G. Starkey, Executive Secretary of the Columbus Chamber of Commerce; Albert Tietzel of Lustron Corp.; Harry L. Creiger of Ohio Inspection Bureau; Russell E. Barnard of Armco Steel Corp.; and Emil J. Szendy, consulting architect of Cleveland, Ohio. A banquet followed the discussion, at which R. E. Small of General Electric spoke on "Application of Turbo-Jets." The Central Ohio Section held their annual dinner-dance at the Mound Builders Club on December 9. A good time was had by all. Officers of the section for the coming year are: M. W. Burkhart, President; H. W. Kuhlman, Vice-President; L. A. Monaco, Secretary; Fred Burkhart, Treasurer; and R. L. Davis, National Director.

In October the members were guests of the Kline Manufacturing Co. of Galena, Ohio. This tool and die shop has several unique features—located on a farm where the owner also raises registered cattle, it features many types and sizes of duplicators and is setting up for super-finishing. A fire about two years ago completely destroyed the old facilities, and now the plant is housed in a modern one-story cement block building.

Ronald Beck, co-author with Bob Davis of "Applied Plastic Product Design" has joined the technical staff of the L. A. Darling Co., Coldwater, Mich. In the past he has been active in local S.P.E. activities, and will be missed.

A. G. Werner Secretary and Treasurer of the St. Louis Section of S.P.E., is severing his connection with Chicago Molded Products Corporation on Jan. 1, 1950.

He represented them for twenty years in Southern Illinois and Eastern Missouri and will continue of part time with other previously represented principles.